2024 Annual Drinking Water Quality Report
for the
Chester Water Department
Public Water System (PWS) ID # 1059000

This report summarizes the quality of the drinking water that we provided in 2024. Included are details about where your water comes from, how it is treated, what it contains, and how it compares to state and federal standards. We are committed to providing you with this information because you have a right to know about the quality of the water you use, and informed customers are our best allies. This report is also known as the 2024 Consumer Confidence Report (CCR).

HIGHLIGHTS:

- ***Were there any Safe Drinking Water Act regulatory violations in 2024?***

  Yes, the maximum contaminant level (MCL) for *trihalomethanes* (TTHM) was not met during the 1st and 2nd quarters of 2024 and the MCL for haloacetic acids (HAA5) was not met in the 1st, 2nd, and 3rd quarters of 2024. Compliance with the MCL is based on the calculated Locational Running Annual Average (LRAA) at two sampling locations in Chester, with a limit of 80 parts per billion (ppb, or µg/L) for TTHM and 60 ppb for HAA5. Notices of these MCL exceedances were provided to customers after each of those violations. TTHM and HAA5 are two classes of disinfection byproducts (DBPs) that form when the chlorine disinfectant reacts with natural organic matter in the water. Per the Massachusetts Department of Environmental Protection (MassDEP), some people who drink water containing trihalomethanes or haloacetic acids more than the MCLs over many years may have an increased risk of getting cancer, and for TTHMs may experience problems with their liver, kidneys, or central nervous system.

  A Notice of Noncompliance (NON) from MassDEP was received on June 7, 2024 addressing DBP level violations during the 4th quarter of 2023 and1st quarter of 2024 and another NON on January 28, 2025 addressing DBP level violations during the 2nd and 3rd quarter of 2024 (these NONs are related to the violations discussed in the previous paragraph). Corrective action plans to reduce DBP levels were sent to DEP in response to these NONs; the actions being taken are addressed in the next section.

  A boil water notice was issued in July 2024 when a sudden, rapid increase in turbidity levels and elevated manganese levels occurred. At the time of this event, two of the three sand filters were out of service for needed maintenance. The concern was that the combination of reduced filtration capability and very high turbidity could introduce bacteria in the water system. The water source was shifted from Austin Brook Reservoir to Horn Pond, which had lower, although still high, turbidity and manganese levels (manganese is not a health issue, but high levels discolor the water with a yellow tinge). Bacteria sampling showed no bacterial contamination and once turbidity levels decreased, the boil water notice was lifted.

- ***What are we doing to improve the water?***

  Several significant actions have been taken to improve water quality. The two sand filters that were out of service in July were being refilled with new sand and had activated carbon filters installed to improve their filtration efficiency and reduce DBP levels. The third sand filter was also refilled with new sand. Austin Brook Reservoir was dredged to remove extensive silt buildup to help reduce turbidity levels. The two clear wells (used to hold the filtered, treated water supply) were inspected, had sediment buildup removed, and were chemically cleaned to remove biofilm buildup to aid in reducing DBP levels. Continuing efforts include routine flushing of all hydrants and the distribution water lines every spring and fall, a managed timber harvesting plan of the Chester watershed to maintain its health, and continued special sampling of both Horn Pond and Austin Brook Reservoir to determine if further actions are required to improve water quality.

  Austin Brook Reservoir

  Of note, the 4th quarter of 2024 was the first time in many years that Chester did not have a DBP violation- an indication that the actions that have been, and will continue to be, taken are having a positive effect on Chester water quality.

I. PUBLIC WATER SYSTEM INFORMATION

Name: Chester Water Department
Address: 15 Middlefield Road, Chester, MA 01011
Contact Person: Don Humason, Town Administrator
Telephone #: 413-354-7760 Fax #: 413-354-2268
Internet Address: https://townofchester.net/water-department

Water System Operations

Our water system is routinely inspected by the MassDEP to ensure we have the technical, managerial, and financial capacity to provide safe drinking water to you. To ensure that we continuously provide high-quality water, a Massachusetts certified licensed operator oversees system operations, checks the treatment plant, tests the water, and records data every day of the year including weekends and holidays.

Opportunities for Public Participation

If you would like to participate in discussions regarding your water quality, you may attend the meetings of the Board of Water Commissioners, held as needed or requested. The meetings are posted in advance outside the Town Hall and on the town website. The current Water Commissioners are Jim Zimmerman (Chair), Bob Daley, and Lora Wade. Please call and make an appointment so enough time can be provided for you. In the event of an emergency during the day, please call the Highway Department first at 413-354-2276 and then the Town Administrator at 413-354-7760. If you are unable to reach either office, please call the Primary Water Operator, Jim Gobeille at 413-454-5372.

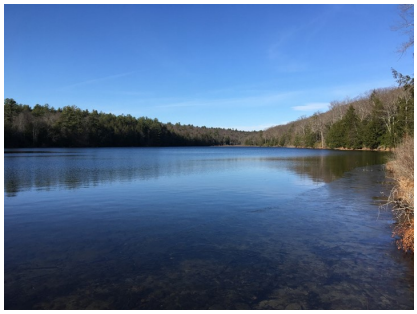
II. YOUR DRINKING WATER SOURCE

Where Does Our Drinking Water Come From?

The Chester Water System is supplied by two surface water sources known as Horn Pond and Austin Brook Reservoir. The main water source is periodically switched between Horn Pond and Austin Brook Reservoir to use water with lower levels of natural organic matter (organic carbon) which is a precursor for the formation of THMs and HAA; Horn Pond is the current water source. The treatment plant is located one mile west of the center of town next to Austin Brook Reservoir. These are both high-quality water sources, located within small, largely undeveloped, watersheds.

How Are These Water Sources Protected?

MassDEP prepared a Source Water Assessment Program (SWAP) report in 2003 for the water supply sources serving this water system to assess their susceptibility for contamination. Horn Pond was rated as having “high” susceptibility and Austin Brook Reservoir as having “moderate” susceptibility based largely on watershed land ownership and potential illegal access to the watersheds. *The complete SWAP report is available at the Town Hall; call the Chester Water Department at 413-354-7760.*



Horn Pond

It is imperative that all consumers take responsibility for the safety of the water in their charge. If you have problems with your plumbing, please repair it in a timely manner to reduce the cost of wasting treated water. If you become aware of a problem in the system, such as a line break or leaky service connection, please contact the Water Department immediately.

How Is The Water Treated?

Our water system makes every effort to provide you with safe, clean drinking water. To improve the quality of the water delivered to you, we treat it to remove several contaminants. We use three slow sand filters for treatment of the raw water. Small particles and organisms such as sediment, algae and bacteria can cause water to take on unpleasant odors or tastes and sometimes make it unhealthy to drink. To remove this material, it is necessary to pass it through a sand filter bed that has several feet of sand. Water is applied to the top of the filter and passes slowly through the sand. This traps most of the particles, and bacteria in the sand degrade organic chemicals. Over time, the sand filter starts to clog. When this happens, it is necessary to remove the top ½ to 1 inch of the filter sand, which is done manually with rakes. In 2024, two of the sand filters each had six-inch activated carbon layers added to improve filtration and reduce DBP levels.

Only two chemicals are added to the water during treatment. Sodium hypochlorite (bleach, NaOCl) is added to the filtered water to provide chemical disinfection and protect you against microbial contaminants. Sodium hydroxide (caustic soda, NaOH) is then added to the water to raise the pH from an initial daily median value of 6.1 up to a median of 7.1 so that the water will be less corrosive to the distribution pipes and household plumbing. This also helps to minimize the potential for lead and copper to leach from those materials into the water.

The water quality of our system is monitored by us and reviewed by MassDEP to determine the effectiveness of the water treatment system and to determine if any additional treatment is required. We monitor continuously at the treatment plant for filtered water turbidity, and for finished water pH and chlorine residual. We also monitor regularly for a wide variety of contaminants in both the finished water and in the distribution system. Monitoring results are presented in Section V.

III. SUBSTANCES FOUND IN DRINKING WATER

Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 800-426-4791.

Contaminants that may be present in source water include:

- Microbial contaminants - such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants - such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming. Periodic yellow to brown discoloration of our water is due to naturally occurring manganese and is not a health concern.
- Pesticides and herbicides - which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants - including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, septic systems, etc.
- Radioactive contaminants - which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Massachusetts Department of Environmental Protection (MassDEP) and U.S. Environmental Protection Agency (EPA) prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) and Massachusetts Department of Public Health (DPH) regulations establish limits for contaminants in bottled water that must provide the same protection for public health (105 CMR 500.000: *The Manufacture, Collection, and Bottling of Water and Carbonated Nonalcoholic Beverages*).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

IV. IMPORTANT DEFINITIONS

- Maximum Contaminant Level (MCL) – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.
- Maximum Contaminant Level Goal (MCLG) –The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- Secondary Maximum Contaminant Level (SMCL) – These standards are developed to protect the aesthetic qualities of drinking water and are not health based.

- Maximum Residual Disinfectant Level (MRDL) -- The highest level of a drinking water disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- Maximum Residual Disinfectant Level Goal (MRDLG) -- The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- Inactivation Ratio (unitless) -- The ratio of "*CT*" achieved to "*CT*" required during disinfection in the water treatment plant, where *CT* = chlorine residual concentration times contact time (*CT* in mg/L-min).
- Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.
- Action Level (AL) – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
- 90th Percentile – Out of every 10 homes sampled, 9 were at or below this level.
- Massachusetts Office of Research and Standards Guideline (ORSG) – This is the concentration of a chemical in drinking water, at or below which, adverse health effects are unlikely to occur after chronic (lifetime) exposure. If exceeded, it serves as an indicator of the potential need for further action.
- Units and acronyms used:

ppm	=	parts per million, or milligrams per liter (mg/l)
ppb	=	parts per billion, or micrograms per liter (µg/l)
ppt	=	parts per trillion, or nanograms per liter (ng/L)
pCi/L	=	picocuries per liter (a measure of radioactivity)
AL	=	Action Level
HAA5	=	The five regulated haloacetic acids
LRAA	=	Locational Running Annual Average
NTU	=	Nephelometric Turbidity Units
ND	=	Not Detected
N/A	=	Not Applicable
TTHM	=	Total trihalomethanes
TT	=	Treatment Technique

V. WATER QUALITY TESTING RESULTS

What Do These Data Represent?

The water quality information presented in the tables below are from the most recent testing done in accordance with the regulations. All data shown was collected during the last calendar year (2024) unless otherwise noted in the table(s). Only the detected contaminants are shown.

A. Treated Water Quality (before leaving the treatment plant):

Filter Effluent Turbidity (monitored to evaluate performance of the slow sand filters):

Regulated Contaminant	Date(s) collected	MCL	MCLG	Level Found	Range of Detections	Violation (Y/N)	Typical Source(s) in Drinking Water
Turbidity (NTU)	continuous	TT ≤ 5 NTU	N/A	19.98	0.00 – 19.98	Y	Suspended particles from soil runoff
		TT ≥ 95% of samples ≤1 NTU		99%	N/A	N	
Turbidity is a measure of the cloudiness of the water. We measure it because it is a good indicator of water quality and performance of the filters. Turbidity compliance is regulated as a treatment technique (TT). The turbidity limits cited in the regulations for our slow sand filtration system are that no samples should exceed 5 NTU and that at least 95% of our samples each month must not exceed 1 NTU Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses and parasites							

that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Chlorine Disinfection Inactivation Ratio (as measured daily during hour of peak flow):

Parameter	Date(s) Collected	MCL	Lowest Detect	Range Detected	Violation (Y/N)	Source(s) in Drinking Water
Inactivation Ratio (IR; unitless)	continuous	TT ≥ 1.0	.8	.8 – 30.1	Y	Water additive used to control microbes
A low IR increases the potential for the presence of disease-causing organisms. These organisms include bacteria, viruses and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.						

Chlorine Disinfectant Residual (as measured at the point of entry to the distribution system):

Parameter	Date(s) Collected	Lowest Detect	Range Detected	Minimum required (TT)	MCLG or MRDL	Violation (Y/N)	Source in Drinking Water
Chlorine disinfectant (ppm)	continuous	0..04	0.04 – 3.82	0.2	N/A	No	Water additive used to control microbes
The chlorine residual at the point of entry to the distribution system cannot be below 0.2 ppm for more than four consecutive hours. The chlorine residual was below 0.2 ppm on 2 days during 2024, but for less than two hours. Low chlorine levels increase the potential risk for the presence of disease-causing organisms. These organisms include bacteria, viruses and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches. Routine coliform bacteria sampling detected no bacteria in our system during 2024.							

Radioactive Contaminants and Nitrate:

Regulated Contaminant	Date(s) Collected	Highest Detect	Range Detected	MCL	MCLG	Violation (Y/N)	Possible Source(s) of Contamination
Gross Alpha (pCi/L) (minus uranium)	7/16/2024	1.30	N/A	15	0	N	Erosion of natural deposits
Radium 226 & 228 (pCi/L) (combined values)	7/16/2024	0.95	N/A	5	0	N	Erosion of natural deposits
Nitrate (ppm)	4/08/2024	0.1	N/A	10	10	N	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits

Secondary Contaminants (aesthetic contaminants):

Secondary Contaminants	Date(s) Collected	Result or Range Detected	Average Detected	SMCL	ORSG	Possible Source(s) of Contamination
Iron (ppb)	11/20/2024	72	49	300	None	Naturally occurring, corrosion of cast iron pipes
Manganese (ppb)	11/20/2024	5	5	50	Health Advisory = 300 ppb	Naturally occurring

Unregulated Contaminants (those for which EPA has not established drinking water standards):

Unregulated Contaminants	Date(s) Collected	Result or Range Detected	Possible Source(s) of Contamination
Sodium (ppm)	4/10/2023	6.4	Natural sources; runoff from use as salt on roadways; by-product of treatment process
Hardness (ppm as $CaCO_3$)	11/24/2020	12	Natural sources of calcium and magnesium

B. *Distribution System Water Quality (samples collected from homes or businesses):*

Bacteria and chlorine disinfectant levels (monitoring for the Revised Total Coliform Rule):

Regulated Contaminant	Date(s) Collected	Highest Detect	Range Detected	MCL or MRDL	MCLG or MRDLG	Violation (Y/N)	Possible Source(s) of Contamination
Total coliform bacteria	monthly	absent	absent	TT	-----	No	Naturally present in the environment
***E. coli* bacteria**	monthly	absent	absent	confirmed positive	zero	No	Naturally present in the environment
Chlorine disinfectant (ppm)	monthly	1.8	0.05 – 1.8	4	4	No	Water additive used to control microbes

Lead and Copper:

Regulated Contaminant	Date(s) Collected	90th Percentile	Action Level (AL)	MCLG	# of Sites Sampled	# of Sites Above the AL	Exceeds AL?	Possible Source(s) of Contamination
Lead (ppb)	10/10/2023	10	15	0	10	0	No	Corrosion of household plumbing
Copper (ppm)	10/10/2023	0.61	1.3	1.3	10	0	No	Corrosion of household plumbing

Sampling from approved locations is conducted to ensure that the locations with the greatest likelihood of contributing lead and copper to the drinking water supply are evaluated and compared to the lead and copper action levels.

INFORMATION ABOUT LEAD IN DRINKING WATER: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The Chester Water Department is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested and should use cold water and not hot water for cooking. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at *https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water*.

Disinfection Byproducts:

Regulated Contaminant	Date(s) Collected	Highest Detect	Range Detected	Highest Average (LRAA)*	MCL or MRDL	MCLG or MRDL	Violation (Y/N)	Possible Source(s) of Contamination
Total Trihalomethanes (TTHMs) (ppb)	quarterly	107	18-107	90 (1st quarter)	80 (compare to LRAA)	N/A	Y	Byproduct of drinking water chlorination
Haloacetic Acids (HAA5) (ppb)	quarterly	70	0 - 70	90 (1st quarter)	60 (compare to LRAA)	N/A	Y	Byproduct of drinking water disinfection

*LRAA = Locational Running Annual Average

INFORMATION ABOUT TRIHALOMETHANES AND HALOACETIC ACIDS IN DRINKING WATER:

Trihalomethanes and haloacetic acids are a by-product of drinking water disinfection. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems

with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer. Some people who drink water containing HAAs in excess of the MCL over many years may have an increased risk of getting cancer.

VI. COMPLIANCE WITH DRINKING WATER REGULATIONS

Does My Drinking Water Meet Current Health Standards?

The water quality data collected and reported by our Licensed Operator to the MassDEP indicate that all current health standards were met in 2024 except for total trihalomethanes (TTHM) and haloacetic acids (HAA5),

Drinking Water Quality Violations

We are committed to providing you with high quality water that is safe for your use. We are required to monitor our drinking water for specific contaminants on a regular basis. Results of regular monitoring are indicators of whether or not our drinking water meets health standards.

We are required to submit to MassDEP a group of reports each month documenting daily performance of the treatment system. This includes reports for filter turbidity, chlorine disinfection, and pH adjustment. In addition, as a public water supply with a surface water source, we are required to monitor for coliform bacteria and disinfectant residual in the distribution system monthly. This measurement tells us whether we are maintaining sufficient chlorine disinfectant in the distribution system pipes. If the amount of disinfectant is too low, bacteria or other organisms could grow in the pipes.

The maximum contaminant level (MCL) for trihalomethanes (TTHM) was not met during the 1st and 2nd quarters of 2024 and the MCL for haloacetic acids (HAA5) was not met in the 1st, 2nd, and 3rd quarters of 2024. Compliance with the MCL is based on the calculated Locational Running Annual Average (LRAA) at two sampling locations in Chester, with a limit of 80 parts per billion (ppb, or µg/L) for TTHM and 60 ppb for HAA5. Notices of these MCL exceedances were provided to customers after each of those violations. TTHM and HAA5 are two classes of disinfection byproducts (DBPs) that form when the chlorine disinfectant reacts with natural organic matter in the water.
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VII. EDUCATIONAL INFORMATON

Cross Connections are hazardous to our drinking water!
Please help us protect our drinking water by eliminating cross connections.

Polluted Source →

← Clean Drinking Water

What is a Cross Connection and What Can I do About it?

A cross connection is a connection between a drinking water pipe and a polluted source. The pollution can come from your own home. For instance, you are going to spray fertilizer on your lawn. You hook up your hose to the sprayer that contains fertilizer. If the water pressure drops (say because of fire hydrant use in the town) when the hose is connected to the fertilizer, the fertilizer may be sucked back into the drinking water pipes through the hose. Using an attachment on your hose called a backflow-prevention device can prevent this problem.

A cross connection survey of commercial, municipal, and non-residential buildings in Chester was conducted by a Mass. certified cross-connect surveyor from Massachusetts Rural Water Association in January 2024. No new back flow preventers were required, and the back flow preventer device at the water plant was tested satisfactorily in January and June 2024.

The Chester Water Department recommends the installation of backflow-prevention devices, such as a low-cost hose bib vacuum breaker, for all inside and outside hose connections. You can purchase this at a hardware store or plumbing supply store. This is a great way for you to help protect the water in your home as well as the drinking water system in your town. For additional information on cross connections and on the status of your water system's cross connection program, please contact the Water Department at 413-354-7760.